

DRAFT
Memorandum

TO: Dave Barfield

FROM: Spronk Water Engineers, Inc.; Dale Book

DATE: August 13, 2003

RE: Republican River Compact;
Update of Nebraska Irrigated Area

As we discussed, the irrigated area mapping for the Nebraska alluvial area in the Republican River Basin could be periodically updated and used to verify changes occurring within Nebraska, whether due to expanded development or reductions for administration. The mapping and database already in place would provide the foundation to perform an updated survey and mapping. The update could be accomplished either by field survey or analysis of satellite imagery. The advantage of the field survey approach is the ability to distinguish fallow land from partially irrigated or recently harvested fields and the higher level of accuracy achieved from field observation. A satellite imagery analysis would require some ground truth data collection in the field and calibration of classification for the imagery. The digitized polygon coverage provides a reasonably efficient means to collect data with a field survey. Teams of two, with GPS and ARCVIEW, or comparable software could be expected to observe and classify 15,000 irrigated acres per day.

The task items involved in updating the coverage would include the following:

1. Obtain and transform current, low cost, satellite imagery of study area to compare with previous mapping. This would allow identification and digitizing of new or changed polygons before going to the field. The coverage would also provide a valuable source of data to monitor irrigated area for the entire basin. DOQ coverage for selected areas may be available at little or no cost to further review areas of interest.
2. Prepare template for recording field data into existing database.
3. Conduct field survey by vehicle with teams of two; one from KDWR and one from SWE.

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4. Office processing of data collected in the field to update existing database. Generation of new maps to display current irrigated area and changes from the baseline.
5. Prepare summary memorandum documenting the methods and results of the update.

The cost to update the current coverage is estimated to be approximately \$40,000, itemized as follows:

Item	Days	Cost	Expenses
Acquire Imagery	3	\$1,920	\$5,000
Office Preparation for Survey	5	\$3,200	
Field Survey (including Travel)	25	\$16,000	\$4,500
Office Processing of Data	10	\$6,400	
Documentation Report	3	\$1,920	
Total	46	\$29,440	\$9,500

Notes:

- a. Time Cost based on rate of \$640/day
- b. Assume \$100/day expenses + vehicle cost @ \$50/day; travel @ \$600
- c. Field survey cost does not include staff member from KDWR.